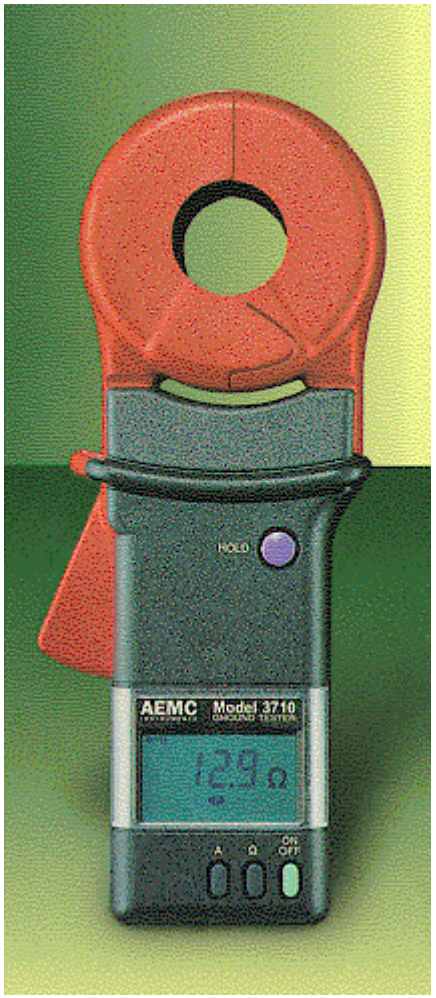
ORIENTATION

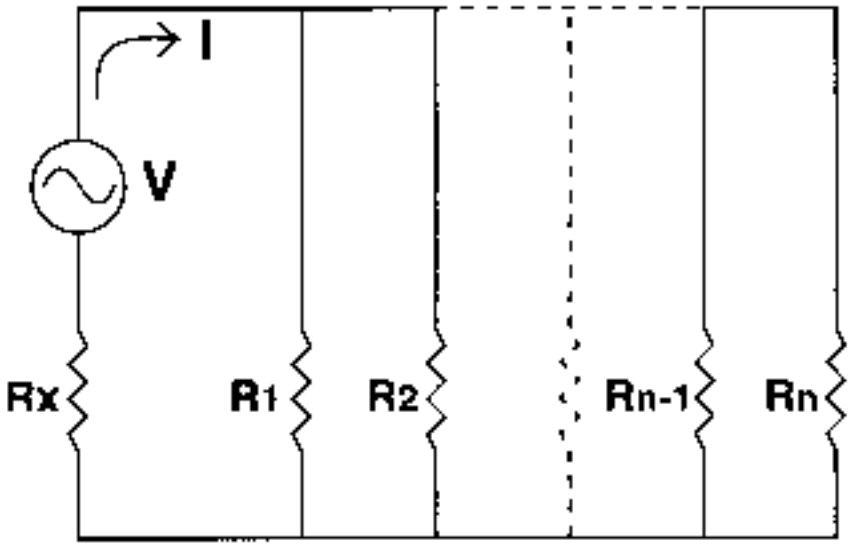
AEMC MODEL 3710 GROUND TESTER



How it works:

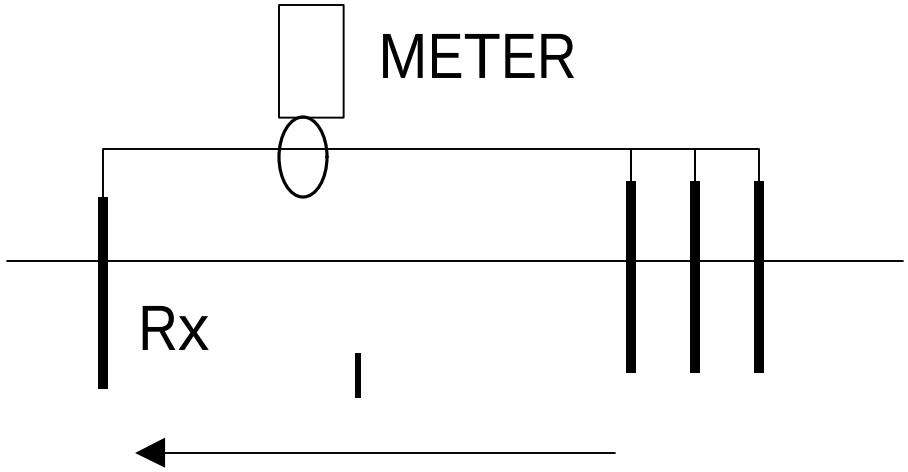
A known current is induced in the ground circuit and the resultant voltage measured. Then resistance is displayed.

SCHEMATIC

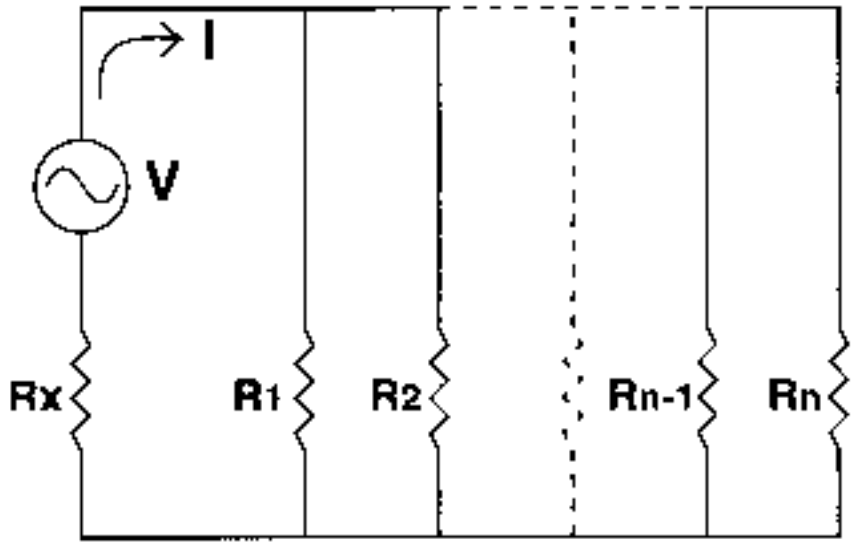


The Ground Under Test, Rx is referenced against all the other grounds in the circuit. A circuit through the ground rods and the earth is established for the measurement.

PHYSICAL PICTURE



Since current must flow through the ground, at least two ground rods must be in the circuit.

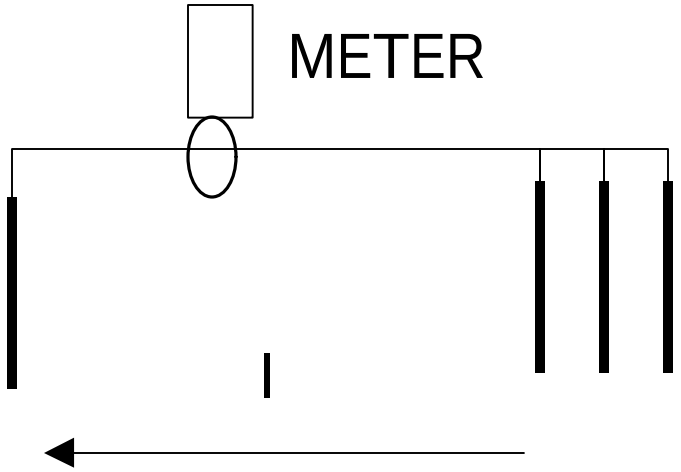


Rx is added in series to the parallel sum of R1-Rn.

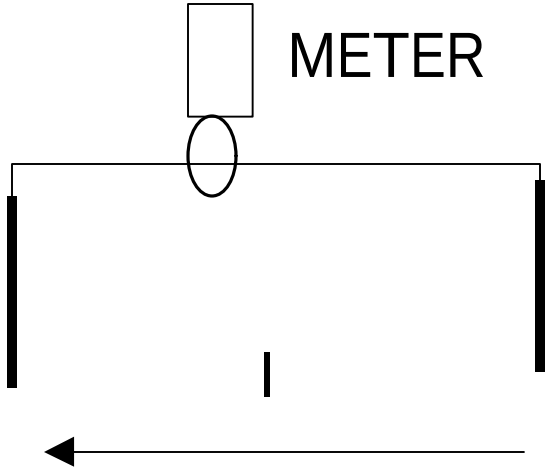
$$R = R_x + \left(\frac{1}{R_1} + \frac{1}{R_2} + .. \frac{1}{R_n}\right)^{-1} = R_x + \left(\sum_1^n R_n^{-1}\right)^{-1}$$

The parallel sum (for many rods) is much lower than Rx, so R is approximately equal to Rx.

Since it adds R1-Rn in parallel more ground rods in the circuit will result in a more accurate measurement. (The parallel sum will be less.)



If only two grounds are in the circuit, the meter will read the SUM of the two grounds. There is no way to distinguish them, unless more ground rods are added.



CONTROLS:

1. Head Assembly: Ground rod/conductor passes within the jaws .

2. Hold Button: Holds last value displayed.

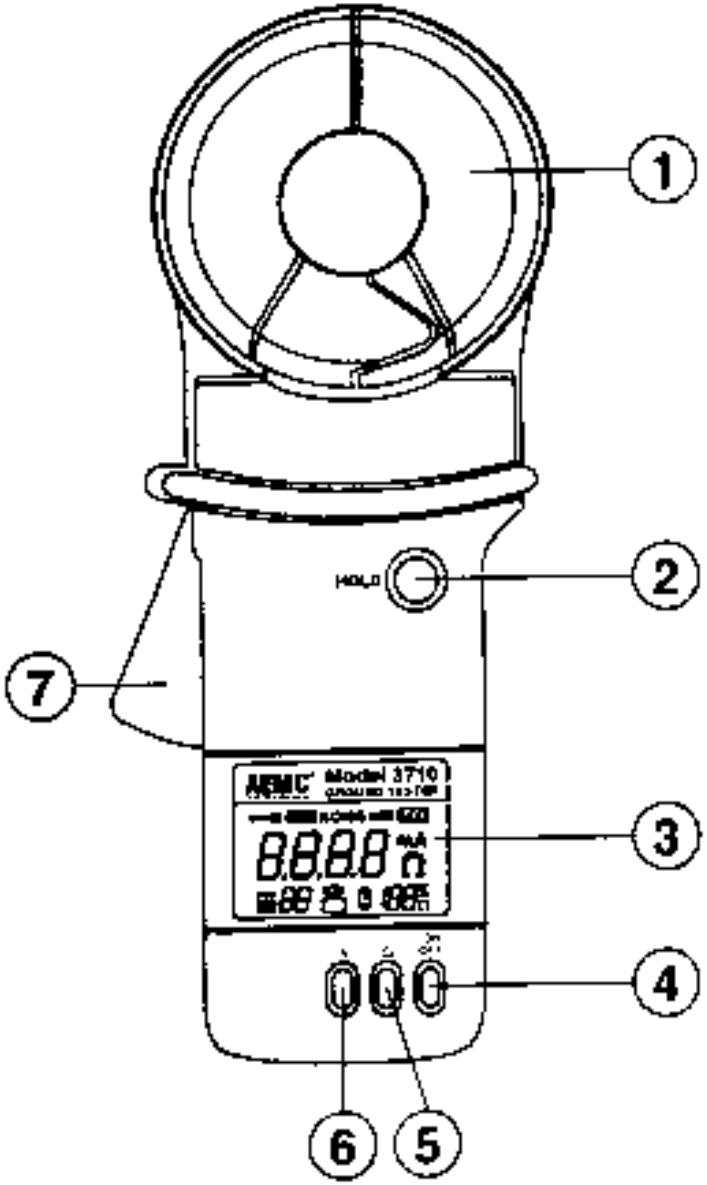
3. Display (see next slide)

4. On/Off button

5. Resistance select

6. Current select

7. Lever: Opens jaws of head assembly.



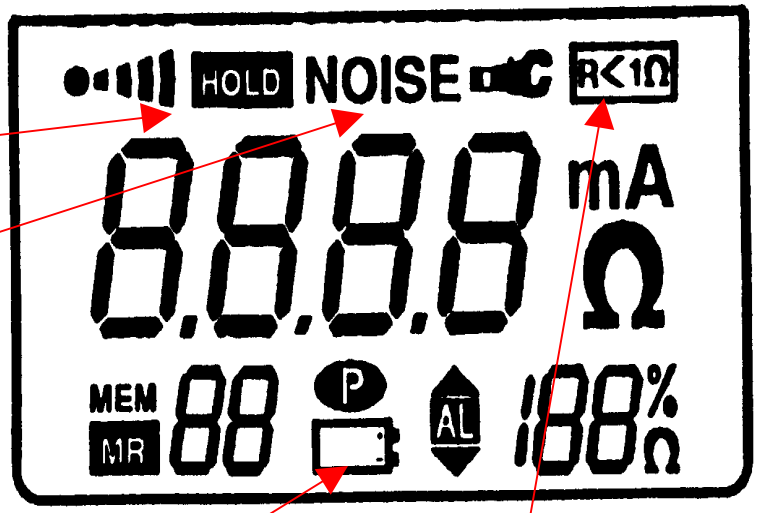
MAJOR INDICATORS:

HOLD: Holding last value.

NOISE: Over 50V or 5A on ground. Inaccurate reading.

If NOISE occurs: STOP TEST! 50V or 5A on the ground indicates a problem and a dangerous condition!

BATTERY: Flashing means battery low, constant means REPLACE BATTERY.



R<1Ω: Means that you are probably measuring a conductive loop and the measurement is not valid.

If the main display reads OL, the value is over the limit of the meter - 1200 Ω for resistance.

See the operators manual for the other indicators.

BASIC INSTRUCTIONS:

CAUTION! Treat all circuits as "LIVE" until you know otherwise!

1. Press ON button (4)

2. Using the lever (7) open the jaws (1) , place around ground electrode conductor or ground rod.

3. Close jaws. Ensure full closure.

4. Check current on the ground first - press A button (6). If this current is more than about 100 mA, there may be a fault condition! If it's more than 5A, the measurement will be inaccurate and there is definitely a fault. STOP THE TEST. RENDER THE SYSTEM SAFE.

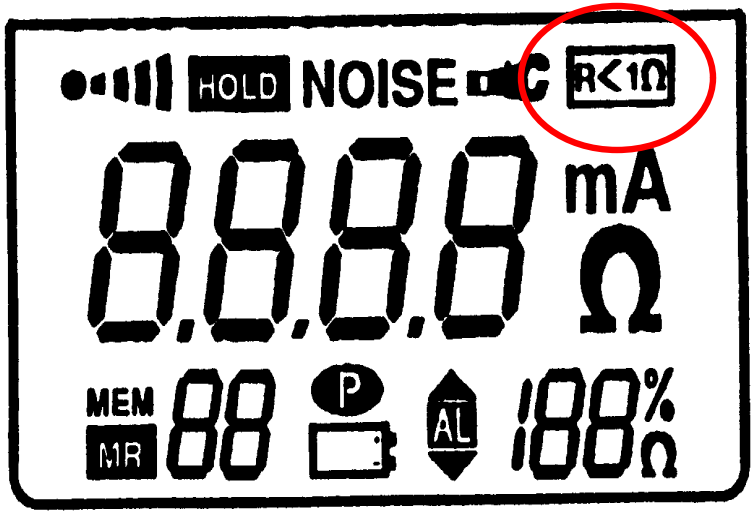
5. If the current checks out, press Ω button (5).

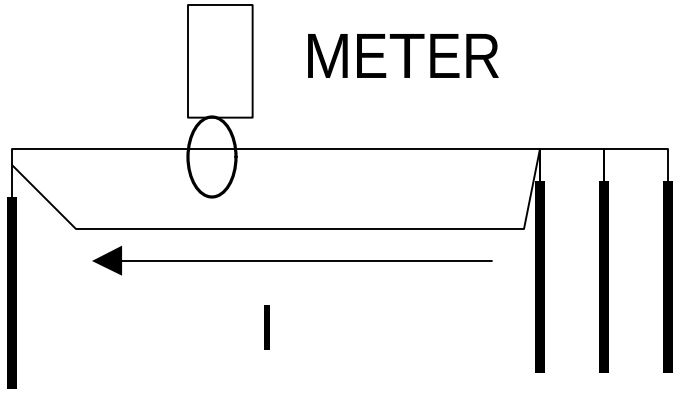
BASIC INSTRUCTIONS (continued):

6. The meter displays ohms now. If “OL” is displayed, the measurement is over 1200 ohms. Other indicators may be displayed if a problem occurs with the measurement. NOISE means over 50V or over 5A is present on the ground. If this occurs, STOP THE TEST and RENDER the SYSTEM SAFE. There is a fault condition.

For R<1Ω, see the next slide.

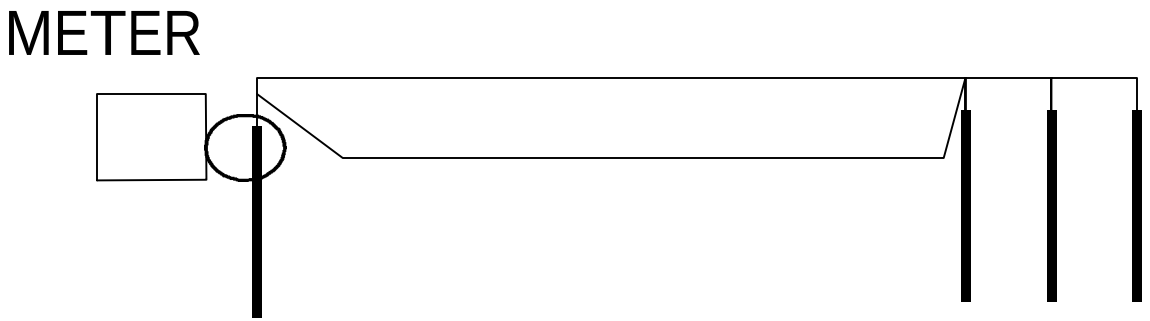
Pressing other control combinations can cause other actions - check the operators manual for details.





R<1Ω: Means that you are measuring a conductive loop.

Most often, there is another wire carrying the measurement current rather than through ground. Usually, changing the location of measurement prevents this.



PMCS/Maintenance:

Check the meter with the CALIBRATION LOOP IAW the operator's manual before use. If it reads beyond the tolerances in the operator's manual, check the jaws for dirt and check the battery. If these are not the problem, the meter will need calibration.

Check the battery via the indicator on the meter's display. Replace the battery if low.

Keep the meter clean and dry. Foreign material and moisture in the contacts between the jaws can cause inaccuracy and eventually corrosion. Wipe the contacts occasionally with a soft, lint free cloth. NO ABRASIVES!

See the operator's manual for further instructions.

CONCLUSION

The AEMC model 3710 is a useful instrument for determining earth ground quality. It does not always yield an exact number, but will give an approximate value - good enough for field use!

Tactical grounds should be 25 ohms! Happy Grounding!

QUESTIONS/COMMENTS:

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